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- (71) Applicant (*for all designated States except US*): **UNIWIS CO., LTD** [KR/KR]; 5 FL., C & S Venture Bldg., 221-2 Nonhyeon-dong, Kangnam-gu, Seoul 135-010 (KR).

(72) Inventors; and

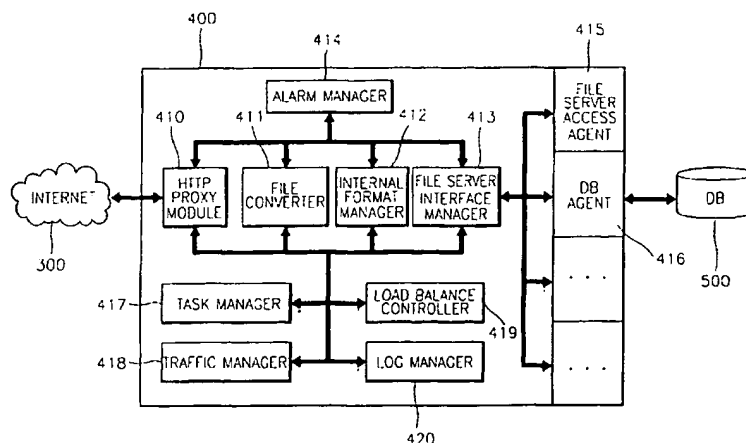
(75) Inventors/Applicants (*for US only*): **KIM, Dae-Weon** [KR/KR]; 102-101, Shinchang Apt., Chang3-dong, Dobong-gu, Seoul 132-780 (KR). **KIM, Hyung-Tae** [KR/KR]; Da-605, Samchang Apt., Woelgye1-dong, Nowoen-gu, Seoul 139-051 (KR).

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(54) Title: APPARATUS AND METHOD FOR CONNECTING AND SERVING A DATA USING WIRELESS TERMINAL.



(57) Abstract: An apparatus and method are provided for allowing a user to directly receive data through his/her wireless terminal at his/her request even in the case of movement or even in the case where wire communication is impossible so that the user can manage business without limitations of a place and circumstance. In the method, when receiving the analysis message, the file server interface manager accesses a database and a storage unit which store different types of data via a file server access agent. The internal format manager converts different formats of the different types of data into an internal format which is defined previously. The internal format of the different types of data is converted into a format that can be recognized by the wireless terminal and is transmitted to the wireless terminal through wireless network. Reception of the data through the wireless terminal ends, the HTTP proxy module terminates the access, erases the data which has been transmitted to the wireless terminal, and waits for another request message. Accordingly, a wireless terminal user not only can use data service which can be provided through the existing wire Internet but also can access a computer.

## APPARATUS AND METHOD FOR CONNECTING AND SERVING A DATA USING WIRELESS TERMINAL

### Technical Field

5           The present invention relates to an apparatus and method for  
accessing and providing data using a wireless terminal, and more  
particularly, to an apparatus and method for allowing a user to directly  
receive data through his/her wireless terminal at his/her request even in  
the case of movement or even in the case where wire communication is  
10 impossible so that the user can manage business without limitations of a  
place and circumstance.

### Background Art

          Generally, access to data through a computer must be allowed in  
15 order to perform data service through wire Internet. Internet data  
service using a wireless terminal can be used through only web servers  
having a data format, which can be used in a computer environment  
connected to the Internet and in a wireless terminal, and only data  
having a predetermined format. Accordingly, in order to view data in an  
20 Internet file server, a user needs to access the Internet file server using  
a computer connected to the wire Internet.

          In a web site providing only wireless Internet data, only data  
having a format suitable for each wireless terminal can be viewed. In  
other words, if the address of a web site having wireless Internet data is  
25 input, and the web site is accessed, the web site having wireless Internet  
data recognizes the access and transmits corresponding data to the  
wireless terminal. After accessing a wireless Internet server and  
checking the data through the wireless terminal, if the user ends the  
access, wireless Internet connection is terminated.

30           However, such a general method of viewing data in an Internet file

server has the following problems.

It is necessary to access the Internet file server through a computer connected to the Internet in order to view data in the Internet file server through the Internet. In addition, when using a wireless terminal, a user can view only messages such as an electronic mail message or only data having a format suitable for the wireless terminal. Accordingly, the user cannot view data created personally or data in a database through the wireless terminal.

10 Disclosure of the Invention

To solve the above-described problems, it is a first object of the present invention to provide an apparatus and method for accessing and providing data using a wireless terminal, thereby allowing a user to use the functions of existing wire Internet through the wireless terminal without spatial or temporal limit.

It is a second object of the present invention to provide an apparatus and method for accessing and providing data using a wireless terminal, thereby allowing a user to use wireless Internet while using a function of receiving data created personally or data in a usual database through the wireless terminal.

It is a third object of the present invention to provide an apparatus and method for accessing and providing data using a wireless terminal, thereby allowing a user to view data from a computer or file server through his/her wireless terminal so that a convenient working environment can be provided for the user.

To achieve the above objects of the invention, there is provided an apparatus for accessing and providing data to allow a user to view different types of data or to use wireless Internet through a wireless terminal. The apparatus includes an HTTP proxy module for receiving and analyzing an access request from the wireless terminal; a file server

interface manager for receiving an analysis message output from the HTTP proxy as the result of analysis and selecting a storage unit or a database to be accessed; a file server access agent for accessing a file system selected by the file server interface manager and accessing a database storing different types of data using a predetermined protocol;  
5 a database agent for accessing a computer according to an access agent selected by the file server interface manager and accessing a database storing different types of data using a predetermined protocol; an internal format manager for converting different data formats of the different types of data, which the file server interface manager and the  
10 database agent fetch from the file system and the computer, respectively, and transmit to the internal format manager, into an internal format which is defined previously; and a file converter for converting the internal format of the data received from the internal format manager into a format which can be recognized by the wireless terminal. The HTTP  
15 proxy module transmits the data from file converter to the wireless terminal through Internet.

The apparatus further includes an alarm manager for informing whether each unit operates abnormally; a task manager for controlling  
20 and managing each unit; a load balance controller for properly re-distribute many requests from the wireless terminal; a traffic manager for managing traffic when there is a request from the wireless terminal and recording particulars necessary for the user; and a log manager for keeping logs of particulars generated by each unit and using them when  
25 necessary.

To achieve the above objects of the invention, there is also provided a method of accessing and providing data to allow a user to view different types of data or web mail through a wireless terminal. The method includes a first step of accessing a predetermined Internet site in  
30 order to show data requested by the user through the wireless terminal;

a second step of converting a format of the data into a format which can be recognized by the wireless terminal and transmitting the converted data to the wireless terminal through a wireless network; and a third step of terminating the access or performing a next service if the data is  
5 completely transmitted to the wireless terminal in the second step.

In the second step, as much data as can be shown by the wireless terminal at one time is transmitted to the wireless terminal, and the remaining data is stored in a wireless data conversion unit.

The method further includes the step of, if the user requests  
10 transmission of other data to the wireless terminal after the previously requested data has completely been transmitted to the wireless terminal, transmitting as much data as can be accommodated by the wireless terminal at one time to the wireless terminal.

To achieve the above objects of the invention, there is provided a  
15 method of accessing and providing data to allow a user to view different types of data stored in a database and a computer or web mail through a wireless terminal. The method includes a first step in which an HTTP proxy module receives an access request from the wireless terminal, analyzes the access request, and transmits an analysis message to a file  
20 server interface manager; a second step in which the file server interface manager receiving the analysis message in the first step determines whether to access a file system and accesses the database and a storage unit which store different types of data via a file server access agent and a database agent using a predetermined protocol; a third step  
25 in which the file server interface manager accessing the database and the storage unit in the second step fetches different types of data from the file system and the computer and transmits the different types of data to an internal format manager; a fourth step in which after the third step, the internal format manager converts different formats of the different  
30 types of data into an internal format which is defined previously; a fifth

step in which after the fourth step, a file converter converts the internal format of the different types of data into a format which can be recognized by the wireless terminal and transmits the converted data to the wireless terminal through Internet; and a sixth step in which after the  
5 fifth step, if the user ends reception of the data through the wireless terminal, the HTTP proxy module terminates the access, erases the data which has been transmitted to the wireless terminal, and waits for another request message.

The different types of data fetched by the file server interface  
10 manager in the third step are stored in a wireless data conversion unit, divided into portions which can each be transmitted to the wireless terminal at one time, and transmitted to the wireless terminal portion by portion.

In the fifth step, the file converter converts the formats of the  
15 different types of data fetched from the database into a format such as WML, HDML, CHTML, SHTML, MHTML, or WBMP that can be recognized by the wireless terminal.

If the data fetched from the database has an attached file, the file converter converts the attached file into a format that can be recognized  
20 by the wireless terminal so that the attached file can be stored in a sub-folder of a corresponding cache folder.

The attached file is classed as a format such as MS Word, HWP, Hunmin chong-um, Johab-hyung Hangul code, Wansung-hyung Hangul code, Unicode, Excel, or PowerPoint so that it can be recognized by the  
25 wireless terminal.

The data and the attached file are used for services such as an intra-office communication network and a bulletin board.

#### Brief Description of the Drawings

30 Preferred embodiments of the present invention will be described

in detail with reference to the attached drawings in which:

FIG. 1 is a diagram of the configuration of an apparatus for accessing and providing data using a wireless terminal according to an embodiment of the present invention;

5        FIG. 2 is a diagram of an embodiment of a wireless data conversion unit of an apparatus for accessing and providing data using a wireless terminal according to the present invention; and

FIG. 3 is a flowchart of a procedure for checking data through a wireless terminal in an apparatus for accessing and providing data using  
10        a wireless terminal according to the present invention.

#### Best mode for carrying out the Invention

FIG. 1 is a diagram of the configuration of an apparatus for accessing and providing data using a wireless terminal according to an  
15        embodiment of the present invention. FIG. 2 is a diagram of an embodiment of a wireless data conversion unit of an apparatus for accessing and providing data using a wireless terminal according to the present invention.

Referring to FIGS. 1 and 2, the apparatus includes a wireless  
20        terminal 100, a wireless network unit 200, Internet 300, a wireless data conversion unit 400, a database (DB) 500, and a storage unit 600.

The wireless network unit 200 includes a wire/wireless connecting unit 210. The wireless data conversion unit or file service system (FSS) 600 includes an HTTP proxy module 410, a filter converter 411, an  
25        internal format manager 412, a data server interface manager 413, an alarm manager 414, a file server access agent 415, a DB agent 416, a task manager 417, a traffic manager 418, a load balance controller 419, and a log manager 420.

More specifically, when a user requests to view different types of  
30        data through the wireless terminal 100, the HTTP proxy module 410 of

the wireless data conversion unit 400 receives an access request from the wireless terminal 100 via the wireless network unit 200 and analyzes the received access request. The file server interface manager 413 receives an analysis message from the HTTP proxy module 410 and  
5 selects the storage unit 600 or the DB 500 which is to be accessed.

The file server access agent 415 accesses a file system selected by the file server interface manager 413 and accesses the DB 500, which stores different types of data, using a predetermined protocol. The DB agent 416 accesses a computer (a DB or storage) selected by  
10 the file server interface manager 413, accesses the DB 500, and fetches different types of data using a predetermined protocol.

Once the file server interface manager 413 and the DB agent 416 fetch different types of data from the file system and the computer, the internal format manager 412 converts different data formats of the  
15 different type of data received from the data server interface manager 413 and the DB agent 416 into an internal format which is defined previously. Then, the file converter 411 converts the data in the internal format received from the internal format manager 412 to have a format which can be recognized by the wireless terminal 100 and  
20 transmits the converted data to the wireless terminal 100 through the Internet 300. In addition, the file converter 411 converts different types of data which is fetched from the DB 500 to have a format such as Wireless Application Language (WML), Handheld Device Markup Language (HDML), Compact Hypertext Markup Language (CHTML),  
25 SHTML, MHTML, or WBMP according to a content type requested by the wireless terminal 100. WML is a protocol suitable for the Internet and mobile communication with respect to application services managed through a mobile communication network. HDML is a set of commands and sentences which define how a wireless terminal such as a hand  
30 phone or PDA interacts with a user. CHTML, SHTML, and MHTML are



a sort of x-HTML which is wireless Internet language. CHTML was adopted by NTT DoCoMo in Japan. SHTML was initiatively developed by Samsung Electronics and AI Net in Korea. MHTML was initiatively developed by KTF and Hansol M.com in Korea.

5 In addition, if the data fetched from the DB 500 has an attached file, the file converter 411 converts the attached data to have a format which can be stored in a sub-folder of a corresponding cache folder. The attached file is classified into a format such as MS Word, HWP, Hunmin chong-um, Johab-hyung Hangul code, Wansung-hyung Hangul  
10 code, Unicode, Excel, or PowerPoint and converted so that it can be recognized by the wireless terminal 100. Here, the data and the attached file are used for service such as an intra-office communication network or a bulletin board.

The alarm manager 414 informs whether each unit operates  
15 abnormally. The task manager 417 controls and manages each unit. The load balance controller 419 properly re-distribute many requests from the wireless terminal 100, manages traffic when a request is generated from the wireless terminal 100, and records particulars necessary for the user. The log manager 420 keeps logs of particulars  
20 generated by each unit and uses them when necessary.

FIG. 3 is a flowchart of a procedure for checking data through a wireless terminal in an apparatus for accessing and providing data using a wireless terminal according to the present invention.

Referring to FIG. 3, in viewing data requested by a user through  
25 the wireless terminal 100, the wireless terminal 100 accesses a predetermined Internet site (for example, <http://www.uniwis.com/userdata>). The wireless network unit 200 requests the address of the predetermined Internet site from the wireless data conversion unit 400. Then, the wireless data conversion unit 400  
30 requests user information, such as the user's name and password, from

the wireless terminal 100.

If the wireless terminal 100 transmits the user information to the wireless data conversion unit 400 through the Internet 300, the wireless data conversion unit 400 fetches the data from the DB 500 or the storage unit 600 in response to acknowledgement of authentication of the user information and sends a response to the wireless terminal 400.

According to a response from the DB 500, the wireless data conversion unit 400 converts a format of data into a format which can be recognized by the wireless terminal 100 and transmits the converted data to the wireless terminal 100 through the Internet 300. Here, as much data as can be shown by the wireless terminal 100 at one time is transmitted to the wireless terminal 100, and the remaining data is stored in the wireless data conversion unit 400.

In addition, in the case where other data is requested by the user after the wireless terminal 100 has completely received all of the data requested before, if the wireless data conversion unit 400 is requested to send the corresponding data to the wireless terminal 100, it sends as much amount of data as can be accommodated by the wireless terminal 100 to the wireless terminal 100.

The scope of the invention will not be restricted to the above embodiments but will be defined by the attached claims.

#### Industrial Applicability

According to the present invention, a wireless terminal user not only can use data service which can be provided through the existing wire Internet but also can access a computer having a unique IP address and receive data through a wireless terminal regardless of a place and time, thereby increasing user's convenience.

What is claimed is:

1. An apparatus for accessing and providing data to allow a user to view different types of data or web mail through a wireless terminal, the apparatus comprising:

5 an HTTP proxy module for receiving and analyzing an access request from the wireless terminal;

a file server interface manager for receiving an analysis message output from the HTTP proxy as the result of analysis and selecting a storage unit or a database to be accessed;

10 a file server access agent for accessing a file system selected by the file server interface manager and accessing a database storing different types of data using a predetermined protocol;

a database agent for accessing a computer according to an access agent selected by the file server interface manager and  
15 accessing a database storing different types of data using a predetermined protocol;

an internal format manager for converting different data formats of the different types of data, which the file server interface manager and the database agent fetch from the file system and the computer,  
20 respectively, and transmit to the internal format manager, into an internal format which is defined previously; and

a file converter for converting the internal format of the data received from the internal format manager into a format which can be recognized by the wireless terminal,

25 wherein the HTTP proxy module transmits the data from file converter to the wireless terminal through Internet.

2. The apparatus of claim 1, further comprising:

an alarm manager for informing whether each unit operates  
30 abnormally;

a task manager for controlling and managing each unit;  
a load balance controller for properly re-distribute many requests from the wireless terminal;

a traffic manager for managing traffic when there is a request from the wireless terminal and recording particulars necessary for the user;  
5 and

a log manager for keeping logs of particulars generated by each unit and using them when necessary.

10 3. A method of accessing and providing data to allow a user to view different types of data or web mail through a wireless terminal, the method comprising:

a first step of accessing a predetermined Internet site in order to show data requested by the user through the wireless terminal;

15 a second step of converting a format of the data into a format which can be recognized by the wireless terminal and transmitting the converted data to the wireless terminal through a wireless network; and

a third step of terminating the access or performing a next service if the data is completely transmitted to the wireless terminal in the  
20 second step.

4. The method of claim 3, wherein in the second step, as much data as can be shown by the wireless terminal at one time is transmitted to the wireless terminal, and the remaining data is stored in a  
25 wireless data conversion unit.

5. The method of claim 3, further comprising the step of, if the user requests transmission of other data to the wireless terminal after the previously requested data has completely been transmitted to the  
30 wireless terminal, transmitting as much data as can be accommodated

by the wireless terminal at one time to the wireless terminal.

6. A method of accessing and providing data to allow a user to view different types of data stored in a database and a computer or web mail through a wireless terminal, the method comprising:

a first step in which an HTTP proxy module receives an access request from the wireless terminal, analyzes the access request, and transmits an analysis message to a file server interface manager;

a second step in which the file server interface manager receiving the analysis message in the first step determines whether to access a file system and accesses the database and a storage unit which store different types of data via a file server access agent and a database agent using a predetermined protocol;

a third step in which the file server interface manager accessing the database and the storage unit in the second step fetches different types of data from the file system and the computer and transmits the different types of data to an internal format manager;

a fourth step in which after the third step, the internal format manager converts different formats of the different types of data into an internal format which is defined previously;

a fifth step in which after the fourth step, a file converter converts the internal format of the different types of data into a format which can be recognized by the wireless terminal and transmits the converted data to the wireless terminal through wireless network; and

a sixth step in which after the fifth step, if the user ends reception of the data through the wireless terminal, the HTTP proxy module terminates the access, erases the data which has been transmitted to the wireless terminal, and waits for another request message.

7. The method of claim 6, wherein the different types of data

5 fetched by the file server interface manager in the third step are stored in a wireless data conversion unit, divided into portions which can each be transmitted to the wireless terminal at one time, and transmitted to the wireless terminal portion by portion.

8. The method of claim 6, wherein in the fifth step, the file converter converts the formats of the different types of data fetched from the database into a format such as WML, HDML, CHTML, SHTML, MHTML, or WBMP that can be recognized by the wireless terminal.

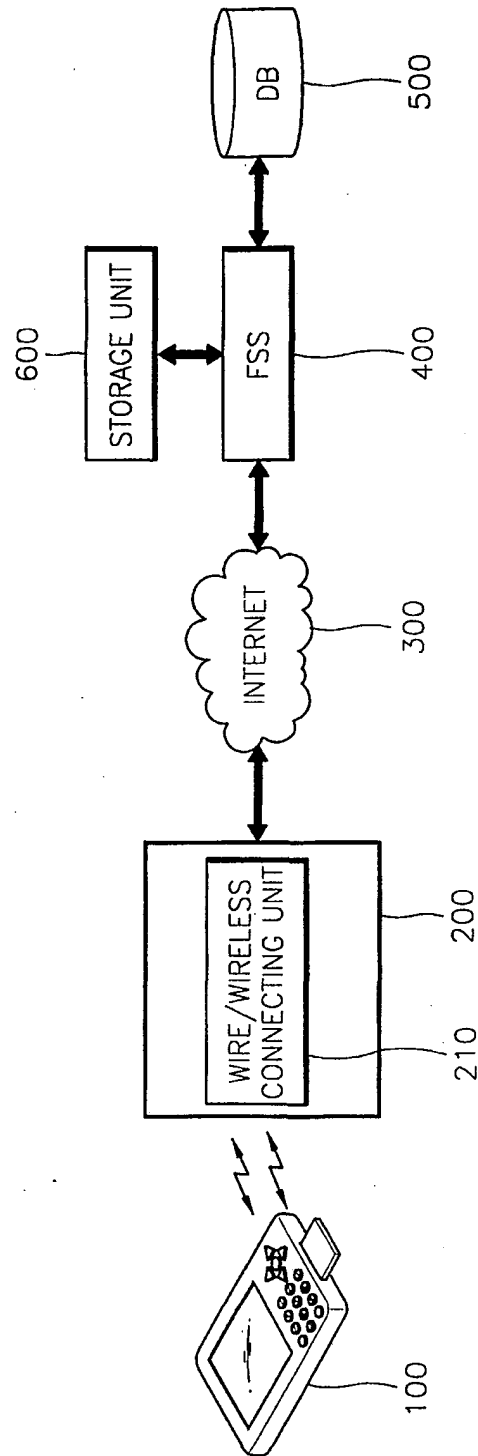
10 9. The method of claim 6, wherein if the data fetched from the database has an attached file, the file converter stores the attached file in a sub-folder of a corresponding cache folder, converts the attached file into a format, which can be recognized by the wireless terminal, at  
15 the request of the wireless terminal to access the attached file, and transmits the converted attached file to the wireless terminal.

10. The method of claim 6, wherein the attached file is classed as a format such as MS Word, HWP, Hunmin chong-um, Johab-hyung  
20 Hangul code, Wansung-hyung Hangul code, Unicode, Excel, or PowerPoint so that it can be recognized by the wireless terminal.

11. The method of claims 6 and 9, wherein the data and the attached file are used for services such as an intra-office communication  
25 network and a bulletin board.

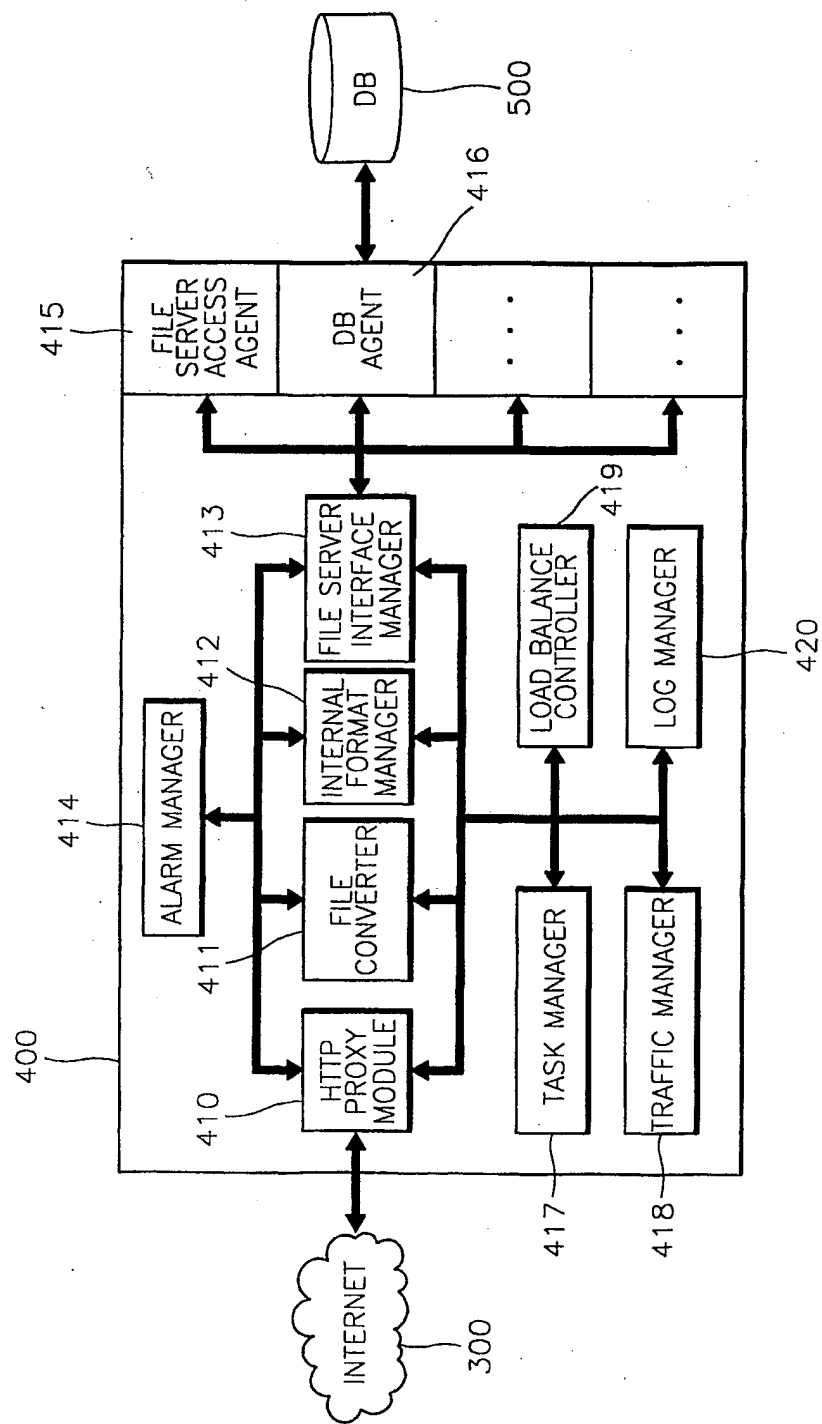
1/3

FIG. 1



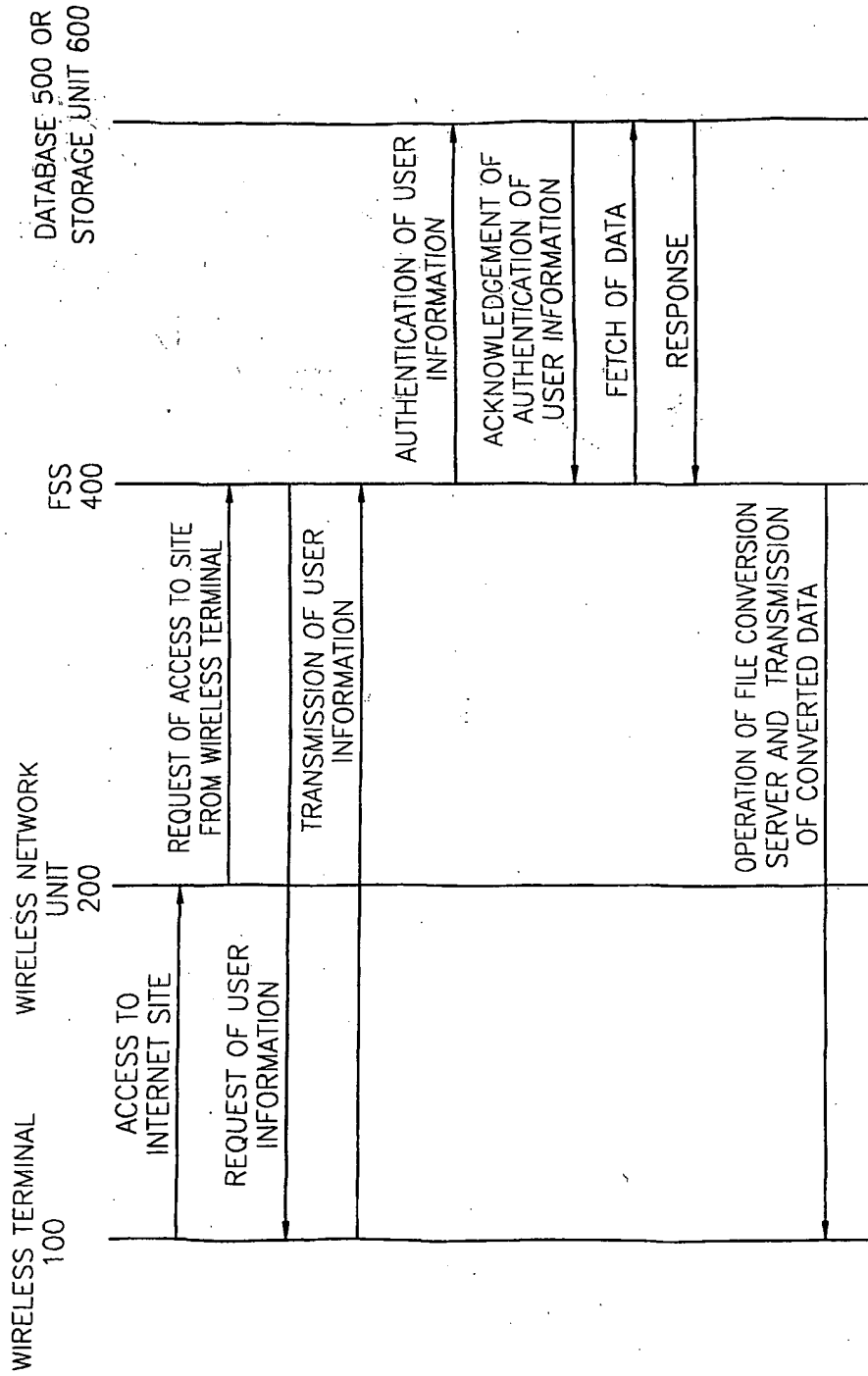
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**FIG. 2**





**FIG. 3**



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR01/01324

**A. CLASSIFICATION OF SUBJECT MATTER****IPC7 G06F 15/16, G06F 17/30**

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC7 : G06F 15/16, G06F 17/60

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

KR, JP : IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

NEW PATENT&amp;UTILITY SEARCH SYSTEM

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X Y	US 6,256,666 A (INTERNATIONAL BUSINESS MACHINES CORP.) 3 JULY 2001, see abstract, claims NO.1-2	1, 3-11 2
A	US 6,023,700 A (CRANBERRY PROPERTIES.) 8 FEBRUARY 2000, see abstract	1

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

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Korean Intellectual Property Office  
Government Complex-Daejeon, Dunsan-dong, Seo-gu, Daejeon  
Metropolitan City 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

BAE, Soon Goo

Telephone No. 82-42-481-5742

